

## Montana Hospital Discharge Data System

Quarterly Surveillance Report  
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### Introducing the Montana Hospital Discharge Data System

The Montana Department of Public Health and Human Services (DPHHS) has a memorandum of agreement with the Montana Hospital Association (MHA) to receive a subset of hospital discharge data elements (Table 1) based on the Uniform Billing 2004 form (UB-04).<sup>1</sup> Although not specifically designed for Public Health use, the UB-04 data are potentially a useful resource for Public Health programs. The Montana Hospital Discharge Data System (MHDDS) allows DPHHS to monitor the burden of many diseases in the population in the absence of disease-specific registries.

- **The Montana Diabetes Project** used hospital discharge data to describe the substantial increase in the burden of diabetes and its complications and to demonstrate its disproportionate impact on residents age 65 years and older.<sup>2</sup> The Diabetes Project will continue to use the MHDDS for surveillance and evaluation of its programs to reduce the prevalence of diabetes, the morbidity from diabetes, and the development of complications of diabetes among Montana residents.<sup>3</sup> Conditions related to diabetes that can be monitored in the MHDDS include
  - chronic kidney disease
  - end stage renal disease
  - foot and leg amputations
  - heart disease
  - stroke
  - gestational diabetes
  - adverse birth outcomes
- **The Montana Asthma Control Program** is required by the terms of their cooperative agreement with the Centers for Disease Control and Prevention to report asthma-related hospital discharge data annually. The program has used the MHDDS to document nearly 5,000 asthma-related hospitalizations per year between 2000 and 2007.<sup>4</sup> Hospitalizations were most common among children under the age of 5 years, who experienced a rate of 25/100,000. The Asthma Control Project will continue to use MHDDS to evaluate the effects of asthma control activities through

<sup>1</sup> National Uniform Billing Committee, [www.nubc.org](http://www.nubc.org)

<sup>2</sup> [http://www.dphhs.mt.gov/PHDS/Diabetes/documents/BurdeninMT\\_000.pdf#Description](http://www.dphhs.mt.gov/PHDS/Diabetes/documents/BurdeninMT_000.pdf#Description)

<sup>3</sup> <http://www.dphhs.mt.gov/PHDS/Diabetes/documents/StatePlan.pdf#Description>

<sup>4</sup> <http://www.dphhs.mt.gov/PHSD/asthma/documents/StatePlan.pdf>

impacts on

- reduced asthma-related hospitalizations
  - reduced costs associated with hospitalizations
  - reduced disparities of access reflected in geographic distribution of hospitalizations
- The **Cardiovascular Health Program** used the MHDDS to determine stroke hospitalization rates by county in order to assess the need for placing telestroke units in Montana communities. The program report, *2007 Burden of Heart Disease and Stroke in the Big Sky State*, used discharge data to document cardiovascular disease, heart failure, coronary heart disease, and stroke hospitalization rates. In addition, discharge data were presented to Stroke Workgroup and Cardiac Workgroup members and was part of a presentation on the Montana Stroke Initiative given at the Yellowstone Valley Regional Stroke Conference. The Cardiovascular Health Program will continue to use MHDDS data in future surveillance activities.

### The Montana Hospital Discharge Data System Data Elements and Limitations

Each record in the MHDDS has one primary diagnosis code, and may have up to eight secondary codes which reflect a variety of co-morbidities or underlying conditions contributing to the reason for hospitalization. Primary and secondary codes may also describe Supplementary Classification of Factors Influencing Health Status and Contact with Health Services (V-codes); secondary codes may describe Supplementary Classification of External Causes of Injury and Poisoning (E-codes). In addition, records may have up to two E-codes as separate variables. Each record also has a primary and up to five secondary procedure codes. All are coded according to the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM).<sup>5</sup> Depending on the intent of the analysis, investigators may use the primary diagnosis alone or in combination with secondary diagnoses and V-codes and E-codes to select cases for analysis.

Table 1: Variables received by DPHHS	
State and county of residence	Primary diagnosis
Sex	Secondary diagnoses (up to 8)
Age	Primary procedure
Admission date	Secondary procedures (up to 5)
Admission type	E-codes
Admission source	V-codes
Discharge date	Facility identifier
Discharge status	Payer

<sup>5</sup> <http://www.cdc.gov/nchs/icd.htm>

At this time, the MHDDS contains only data on individuals who were admitted to a Montana hospital that provides data through the MHA agreement. No data are available on individuals treated and released in an Emergency Department. Emergency Department data collection is being piloted during 2009 and it is anticipated that these data will be available for review in June, 2010. The MHDDS data sets do not contain individual identifiers so hospital discharges cannot be linked to other data sets, and the data cannot be de-duplicated if individuals are admitted more than once during an time interval of interest. No interstate agreements exist for exchange of data on Montana residents hospitalized out of state.

Between 43 and 48 of Montana's 54 acute care hospitals participated in this voluntary data sharing activity between 2000 and 2007, providing data on about 100,000 hospital admissions each year (Table 2). Reporting is more than 90% complete by participating hospitals. A few small, rural acute care hospitals, the Ft. Harrison Veterans' Administration hospital (with 50 general medical, surgical, and psychiatric beds), Shodair Children's Hospital (with 20 acute-care beds for children ages 3 to 18 years with psychiatric diagnoses), the Montana State Hospital at Warm Springs (with approximately 275 mental health discharges per year), and three Indian Health Service facilities do not participate at this time. In addition, long-term care facilities such as nursing homes do not participate. We estimate that participating hospitals account for between 80% and 85% of all acute hospitalizations in the state.

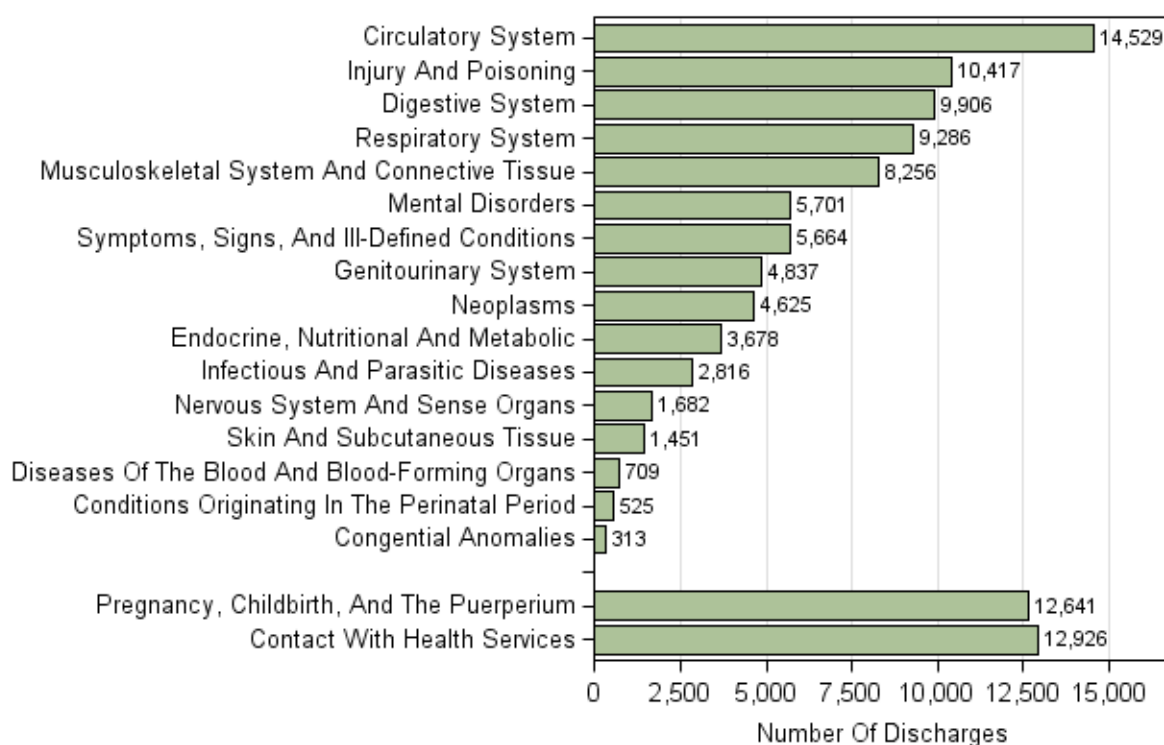
Epidemiologists in the Montana DPHHS may request direct access to MHDDS data sets, available in either SAS or SPSS formats. Assistance with analysis and interpretation of the data is also available from the MHDDS staff. Our data use agreement with the MHA does not permit sharing data sets outside of Montana DPHHS but summary data and limited customized analysis will be available on request.

Table 2: Reporting completeness by year								
Year	2000	2001	2002	2003	2004	2005	2006	2007
Participating hospitals	44	43	47	44	47	46	48	47
Cases Reported	97,459	102,739	104,294	103,138	104,967	109,491	112,861	109,962
Percent Of Discharges Reported	96%	96%	97%	95%	96%	98%	99%	98%

## Principal Diagnoses For Hospitalization

The Principal Diagnoses for hospitalizations for Montana in 2007 are shown in descending order of frequency in Figure 1. Hospitalizations associated with Pregnancy, Childbirth, and the Puerperium and with Contact with Health Services are shown separately because they represent primarily routine encounters with the health care system. Each of the broad categories of Principal Diagnoses can be further subdivided with the ICD-9-CM codes to very specific diagnoses.

Figure 1. Principal Diagnoses in the Montana Hospital Discharge Data System, 2007 by Major Category of the ICD-9-CM



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